

Response Under 37 CFR 1.116

Expedited Procedure

Examining Group 1722

Appl. No. 10/717,018

Amdt. AF dated December 21, 2005

Reply to final Office Action of 09-21-2005

Attorney Docket No. 1217-032261

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended): A single crystal pulling apparatus for a metal fluoride, comprising:

a chamber constituting a crystal growth furnace;

a crucible provided in the chamber for filling with a molten solution of a single crystal material;

a melting heater provided to surround the crucible;

a vertically movable single crystal pulling bar for attaching a seed crystal on a tip and adapted to come in contact with the molten solution of the single crystal material in the crucible;

a heat insulating wall provided in the chamber to surround at least a peripheral side portion of a single crystal pulling region in an upper part of the crucible;

a ceiling board for closing an opening portion of an upper end in an upper part of the heat insulating wall; and

a single crystal pulling chamber surrounded by the heat insulating wall and the ceiling board, wherein the single crystal pulling chamber is defined by a single crystal pulling region which vertically extends from an upper end of the crucible to a height that an upper end of the single crystal of a metal fluoride to be grown reaches at the end of pulling, terminating at a location below said ceiling board; and

wherein the ceiling board is provided with at least an inserting hole for inserting the single crystal pulling bar, and the ceiling board has a coefficient of thermal conductivity in a direction of a thickness of the ceiling board of 1000 to 50000 W/m²· K.

2. (Original): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein a coefficient of thermal conductivity in a direction of a thickness of the heat insulating wall is 100 W/m²· K or less.

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3. (Previously Presented): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein the ceiling board is a graphite plate.

4. (Previously Presented): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein the ceiling board is positioned in a higher place than an upper end of the crucible by 50 to 500% of a maximum inside diameter of the crucible.

5. (Previously Presented): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein a total opening area of apertures formed on the ceiling board is 5 to 60% of an opening area of an upper end in a circular enclosure of the heat insulating wall.

6. (Previously Presented): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein the metal fluoride is calcium fluoride.

7. (Currently Amended): The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein the crucible ~~has-a~~ has an inside diameter of 11 cm or more.

8. (New): The single crystal pulling apparatus of claim 1 which includes a cylindrically-shaped partition wall positioned circumferentially between the melting heater and the crucible, said partition wall terminating at a top edge located above the melting heater, and an annular lid member extending from the top edge of said partition wall to the heat insulating wall, whereby upward radiation of heat from the melting heater is minimized.